

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

June 25, 2012

Ms. Tara Rand
Account Executive – New England/CT
Crown Castle USA
500 West Cummings Park
Suite 3600
Woburn, MA 01801

Dear Ms. Rand:

The Connecticut Siting Council (Council) recently received a request from New Cingular Wireless PCS, LLC (AT&T) to acknowledge a planned change of antennas on an existing telecommunications tower located at 1919 Boston Post Road in Guilford, Connecticut. The Council's records indicate that a Certificate of Environmental Compatibility and Public Need (Certificate) for this tower was originally granted to Global Signal Acquisitions II in the Council's Docket No. 349 on May 22, 2008. The paperwork associated with the above mentioned request from AT&T indicated that Crown Castle now owns this tower. However, the Council's records indicate that no request for a Transfer of Certificate was ever received in accordance with Connecticut General Statutes § 16-50k.

The purpose of this letter is to ask Crown Castle to submit a request for a Transfer of Certificate from Global Signal Acquisitions II to Crown Castle so that the Council's records can be kept up to date with the current ownership of this facility. The request shall indicate that Crown Castle agrees to comply with the terms, limitations and conditions contained in the original Certificate. Should you have any questions about this matter, you can contact me at the above address or the Council's staff attorney, Melanie Bachman at 860-827-2951.

Thank you for your attention to this matter.

Sincerely,

Linda Roberts
Executive Director

LR:cdm

c: Melanie Bachman, CSC





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June 15, 2012

Jennifer Young Gaudet
HPC Wireless Services
46 Mill Plain Road, Floor 2
Danbury, CT 06811

RE: **EM-CING-060-120601** – New Cingular Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 1919 Boston Post Road, Guilford, Connecticut.

Dear Ms. Gaudet:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

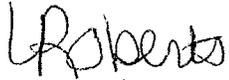
The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated May 31, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change



with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,



Linda Roberts
Executive Director

LR/CDM/cm

c: The Honorable Joseph S. Mazza, First Selectman, Town of Guilford
Regina Reid, Zoning Enforcement Officer, Town of Guilford
Crown Castle



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Ten Franklin Square, New Britain, CT 06051

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June 1, 2012

The Honorable Joseph S. Mazza
First Selectman
Town of Guilford
Town Hall
31 Park Street
Guilford, CT 06437

RE: **EM-CING-060-120601** – New Cingular Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 1919 Boston Post Road, Guilford, Connecticut.

Dear First Selectman Mazza:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by June 15, 2012.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts
Executive Director

LR/cm

Enclosure: Notice of Intent

c: Regina Reid, Zoning Enforcement Officer, Town of Guilford

EM-CING-060-120601

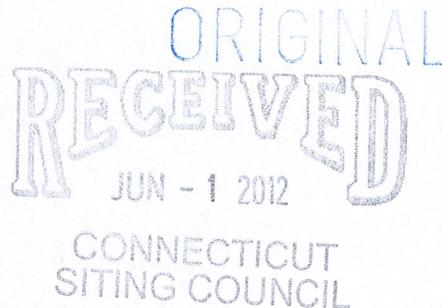


HPC Wireless Services
46 Mill Plain Rd.
Floor 2
Danbury, CT, 06811
P.: 203.797.1112

May 31, 2012

VIA OVERNIGHT COURIER

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051
Attn: Ms. Linda Roberts, Executive Director



Re: New Cingular Wireless PCS, LLC – exempt modification
1919 Boston Post Road, Guilford, Connecticut

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of New Cingular Wireless PCS, LLC (“AT&T”). AT&T is making modifications to certain existing sites in its Connecticut system in order to implement LTE technology. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction that constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the First Selectman of the Town of Guilford.

AT&T plans to modify the existing wireless communications facility owned by Crown Castle and located at 1919 Boston Post Road in the Town of Guilford (coordinates 41°-18’-01.3” N, 72°-42’-27.5” W). Attached are a compound plan and elevation depicting the planned changes, and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration. Also included is a power density report reflecting the modification to AT&T’s operations at the site.

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes (“C.G.S.”) Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. AT&T will add three (3) LTE panel antennas to existing T-arms at a center line of approximately 108’, for a total of nine (9) antennas. Six (6) RRUs (remote radio units)

Boston

Albany

Buffalo

Danbury

Philadelphia

Raleigh

Atlanta

Ms. Linda Roberts

May 31, 2012

Page 2

will be mounted to the monopole, and a surge arrestor will be attached to the T-arm behind the antennas. AT&T will also place a DC power and fiber run from the equipment to the antennas, up the tower along the existing coaxial cable run. The proposed modifications will not extend the height of the approximately 149' structure.

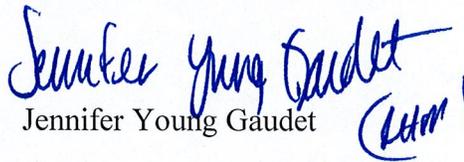
2. The proposed changes will not extend the site boundaries. AT&T will place related equipment within its existing equipment shelter, and attach a GPS antenna to a shelter post. These changes will be within the existing compound and will have no effect on the site boundaries.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more. The incremental effect of the proposed changes will be negligible.

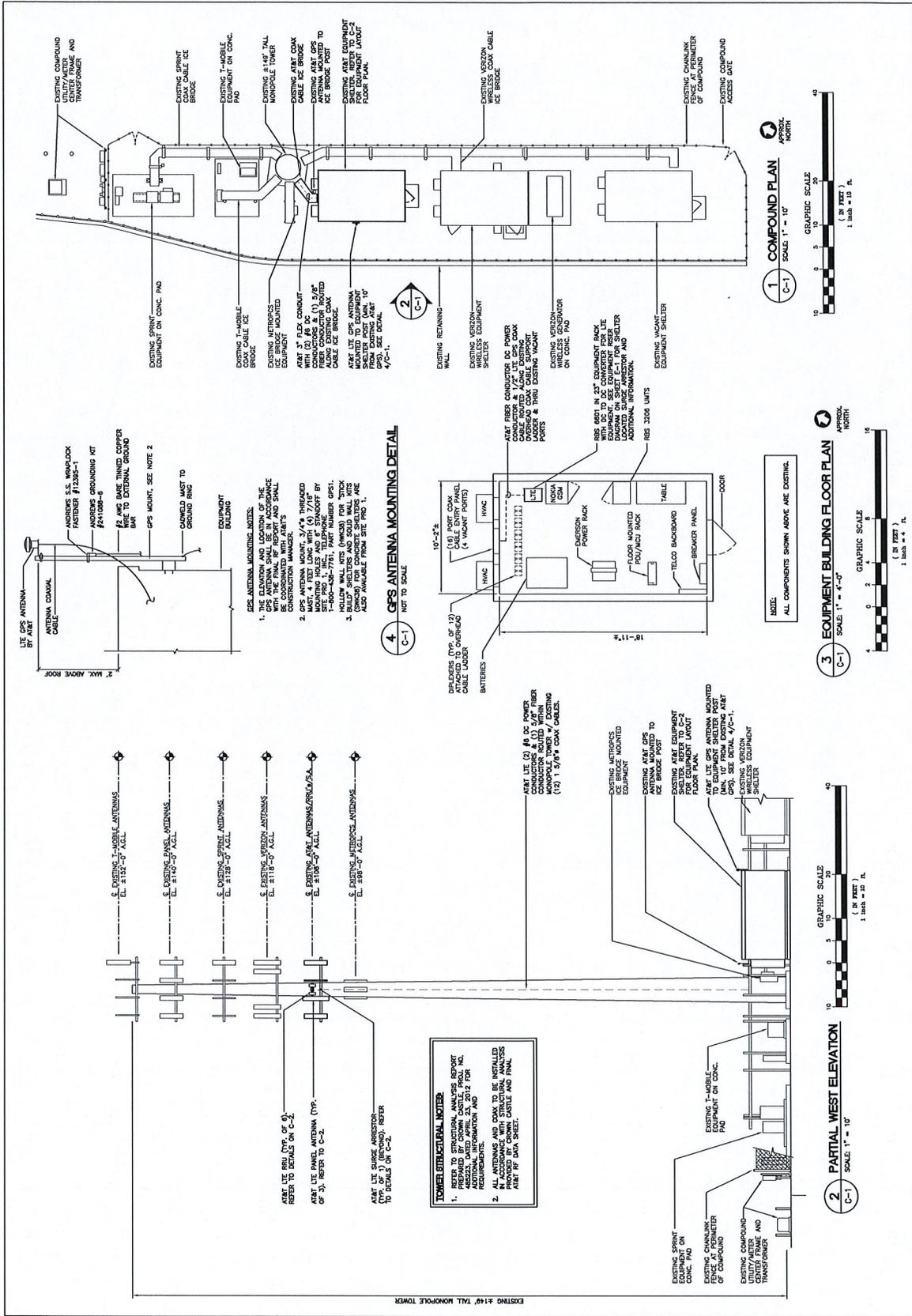
4. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated on the attached report prepared by C Squared Systems, LLC, AT&T's operations at the site will result in a power density of approximately 2.76%; the combined site operations will result in a total power density of approximately 48.34%.

Please feel free to contact me by phone at (860) 798-7454 or by e-mail at jgaudet@hpcwireless.com with questions concerning this matter. Thank you for your consideration.

Respectfully yours,


Jennifer Young Gaudet

cc: Honorable Joseph S. Mazza, First Selectman, Town of Guilford
Roger W. Stone (underlying property owner)



Date: April 23, 2012

James Williams
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
Subject: Structural Analysis Report



Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Carrier Designation: AT&T Mobility Co-Locate
Carrier Site Number: CT2158
Carrier Site Name: Guilford

Crown Castle Designation: Crown Castle BU Number: 876343
Crown Castle Site Name: GUILFORD WEST STONE PROPERTY
Crown Castle JDE Job Number: 183505
Crown Castle Work Order Number: 485223
Crown Castle Application Number: 144900 Rev. 1

Engineering Firm Designation: Crown Castle Project Number: 485223

Site Data: 1919 Boston Post Rd., GUILFORD, New Haven County, CT
Latitude 41° 18' 1.27", Longitude -72° 42' 29.13"
149 Foot - Monopole Tower

Dear James Williams,

Crown Castle is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 485223, in accordance with application 144900, revision 1.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Existing + Reserved + Proposed Equipment

Sufficient Capacity

Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

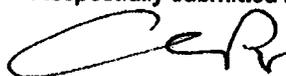
The analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon a wind speed of 85 mph fastest mile.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at Crown Castle appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Tyler Stevens, E.I.T. /IS

Respectfully submitted by:


Aaron C Poot, P.E.
Engineering Supervisor

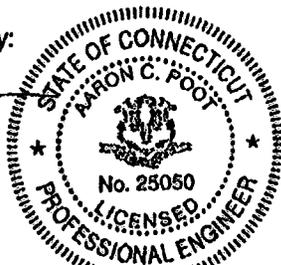


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1) INTRODUCTION

This tower is a 149 ft Monopole tower designed by EEI in June of 2008. The tower was originally designed for a wind speed of 115 mph per TIA-222-G.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
108.0	108.0	6	ericsson	RRUS-11	2	3/4	-
		1	tower mounts	Side Arm Mount [SO 102-3]			
106.0	108.0	1	kmw communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe	1	3/8	-
		2	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
148.0	152.0	3	ems wireless	RR90-17-02DP w/ Mount Pipe	6	1-5/8	1
		3	ericsson	KRY 112 71/1			
	148.0	3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/Mount Pipe	6	1-5/8	2
		3	rfs celwave	ATMAA1412D-1A20			
		1	tower mounts	Sector Mount [SM 901-3]	-	-	1
139.0	140.0	12	decibel	DB848H90E-XY w/Mount Pipe	12	1-1/4	1
	139.0	1	tower mounts	Sector Mount [SM 901-3]			
128.0	128.0	3	decibel	DB980H90E-M w/ Mount Pipe	6	1-5/8	1
		1	tower mounts	Sector Mount [SM 901-3]			
116.0	118.0	4	andrew	DB846F65ZAXY w/ Mount Pipe	12	1-5/8 1/2	1
		1	antel	BXA-171063-12BF w/ Mount Pipe			
		1	antel	BXA-171063-8BF-2 w/ Mount Pipe			
		1	antel	BXA-171085-12BF-2 w/ Mount Pipe			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
	116.0	3	antel	BXA-70063/6CF-2 w/ Mount Pipe			
		2	decibel	DB846H80E-SX w/ Mount Pipe			
		1	maxrad	GPS-TMG-26NMS			
		6	rfs celwave	FD9R6004/2C-3L			
		1	tower mounts	Sector Mount [SM 901-3]			
106.0	108.0	6	powerwave technologies	7200.40 w/ Mount Pipe	12	1-5/8	1
		12	powerwave technologies	LGP 21403			
	106.0	1	tower mounts	T-Arm Mount [TA 602-3]			
98.0	98.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8	1
55.0	57.0	1	lucent	KS24019-L112A	1	1/2	1
	55.0	1	tower mounts	Side Arm Mount [SO 701-1]			

- Notes:
 1) Existing Equipment
 2) Reserved Equipment

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
150	150	12	Generic	72" x 12" Panel	-	-
140	140	12	Generic	72" x 12" Panel	-	-
130	130	12	Generic	72" x 12" Panel	-	-
120	120	12	Generic	72" x 12" Panel	-	-
110	110	12	Generic	72" x 12" Panel	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Terracon	2302346	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Engineered Endeavors Inc.	2262540	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Engineered Endeavors Inc.	2302343	CCISITES

3.1) Analysis Method

tnxTower (version 6.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	149 - 135.039	Pole	TP26.77x22x0.1875	1	-3.80	781.03	10.2	Pass
L2	135.039 - 92.1667	Pole	TP40.91x25.0568x0.25	2	-13.64	1575.67	56.5	Pass
L3	92.1667 - 45.2031	Pole	TP56.31x38.49x0.3125	3	-23.52	2589.77	69.5	Pass
L4	45.2031 - 0	Pole	TP71x53.1174x0.375	4	-40.91	3890.11	67.7	Pass
							Summary	
						Pole (L3)	69.5	Pass
						Rating =	69.5	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	41.2	Pass
1	Base Plate	0	41.3	Pass
1	Base Foundation	0	76.9	Pass

Structure Rating (max from all components) =	76.9%
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Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The structure and its base foundation have sufficient capacity to carry the existing, reserved, and proposed loading. No modifications are required at this time.



C Squared Systems, LLC
65 Dartmouth Drive, Unit A3
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions



CT2158 – Guilford

1919 Boston Post Road, Guilford, CT

May 10, 2012

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the monopole tower located at 1919 Boston Post Road in Guilford, CT. The coordinates of the tower are 41° 18' 1.22" N, 72° 42' 27.52" W.

AT&T is proposing the following modifications:

- 1) Install three 700 MHz LTE antennas (one per sector).

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \times \text{EIRP}}{4\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the finished modifications.

4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm ²)	Limit	%MPE
Cingular UMTS	110	1935	1	500	0.0149	1.0000	1.49%
SNET/Cingular	112	1900	N/A	N/A	0.0254	1.0000	2.54%
SNET/Cingular	112	880	N/A	N/A	0.0651	0.5867	11.10%
Verizon cellular	120	869	9	389	0.0874	0.5793	15.09%
Verizon PCS	120	1970	7	286	0.0500	1.0000	5.00%
Verizon AWS	120	2145	1	716	0.0179	1.0000	1.79%
Verizon LTE	120	698	2	721	0.0360	0.4653	7.74%
Pocket	103	2130	3	631	0.0642	1.0000	6.42%
T-Mobile GSM	148	1945	8	120	0.0158	1.0000	1.58%
T-Mobile UMTS	148	2100	2	674	0.0221	1.0000	2.21%
Sprint	130	1957.5	11	122	0.0286	1.0000	2.86%
Nextel	140	851	9	100	0.0165	0.5673	2.91%
AT&T UMTS	108	880	2	565	0.0035	0.5867	0.59%
AT&T UMTS	108	1900	2	875	0.0054	1.0000	0.54%
AT&T LTE	108	734	1	1313	0.0040	0.4893	0.83%
AT&T GSM	108	880	1	283	0.0009	0.5867	0.15%
AT&T GSM	108	1900	4	525	0.0065	1.0000	0.65%
						Total	48.34%

Table 1: Carrier Information^{1 2 3}

¹ The existing CSC filing for SNET/Cingular should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for carriers other than AT&T was taken directly from the CSC database dated 3/29/2012. Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

² In the case where antenna models are not uniform across all 3 sectors for the same frequency band, the antenna model with the highest gain was used for the calculations to present a worse-case scenario.

³ Antenna height listed for AT&T is in reference to the Crown Castle Structural Analysis Report dated 4/23/2012.

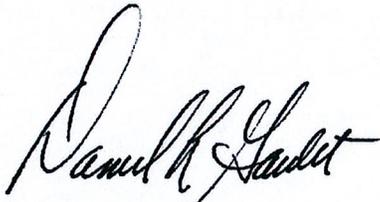
5. Conclusion

The above analysis verifies that emissions from the existing site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **48.34% of the FCC limit**.

As noted previously, obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.

A handwritten signature in black ink, appearing to read 'Daniel L. Goulet'.

Daniel L. Goulet
C Squared Systems, LLC

May 10, 2012

Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure⁴

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure⁵

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

⁴ Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

⁵ General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

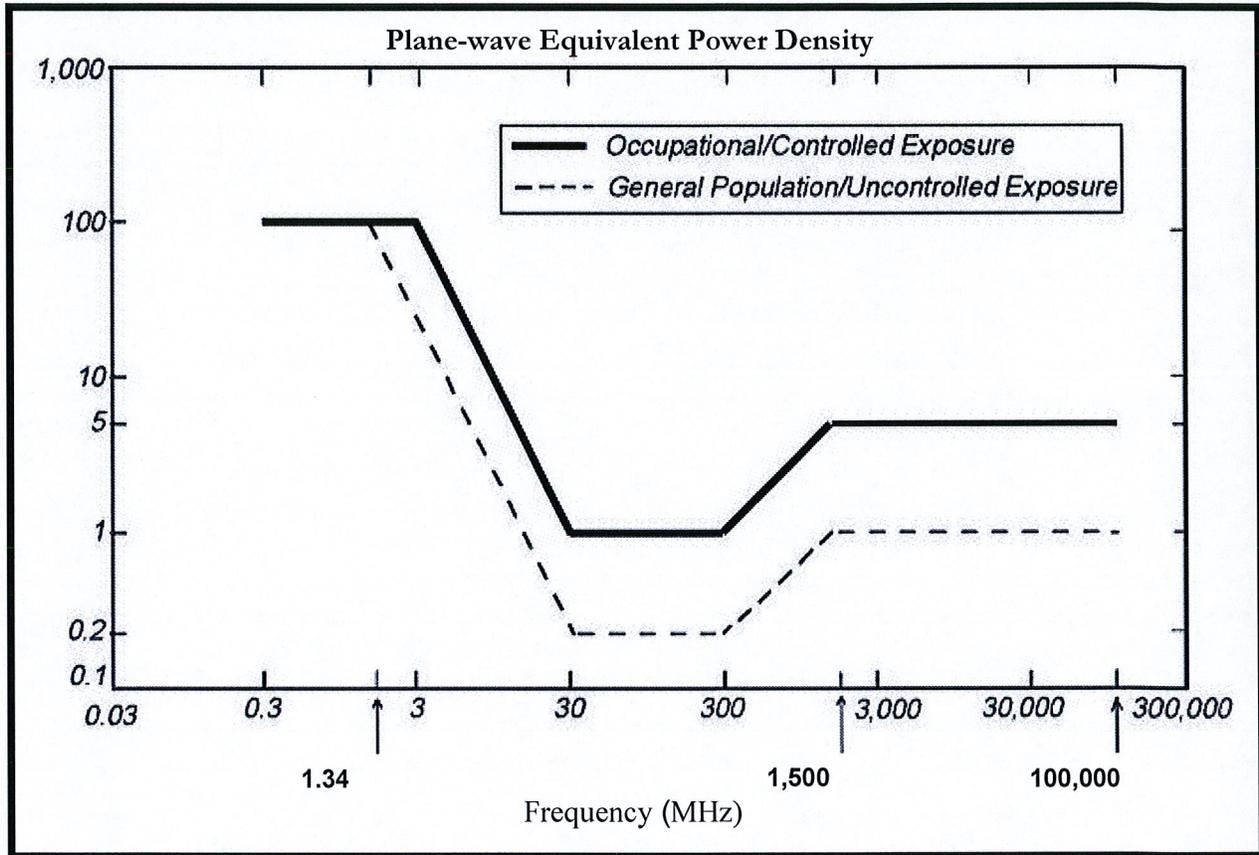
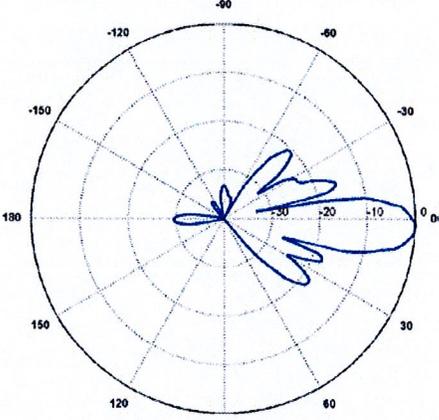
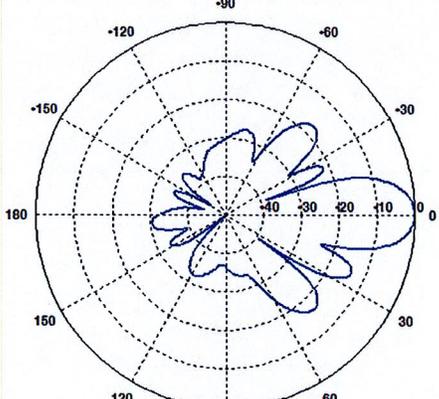


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Data Sheets and Electrical Patterns

<p>700 MHz</p> <p>Manufacturer: KMW Model #: AM-X-CD-16-65-00T Frequency Band: 698-806 MHz Gain: 13.4 dBd Vertical Beamwidth: 12.3 ° Horizontal Beamwidth: 65° Polarization: Dual Slant ± 45° Size L x W x D: 72"x11.8"x5.9"</p>	
<p>850 MHz</p> <p>Manufacturer: Powerwave Model #: 7770 Frequency Band: 824-896 MHz Gain: 11.4 dBd Vertical Beamwidth: 15° Horizontal Beamwidth: 85° Polarization: Dual Slant ± 45° Size L x W x D: 55.4"x11.0"x5.0"</p>	
<p>1900 MHz</p> <p>Manufacturer: Powerwave Model #: 7770 Frequency Band: 1850-1990 MHz Gain: 13.4 dBd Vertical Beamwidth: 7° Horizontal Beamwidth: 90° Polarization: Dual Slant ± 45° Size L x W x D: 55.4"x11.0"x5.0"</p>	